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ATTACHMENT - CLAIMS LISTING

This listing of claims will replace all prior versions, and listings, of claims in the application.

1-26. (Canceled)

27. (Currently Amended) A device for measuring elasticity of a human or animal organ, or viscoelastic environments presenting an ultrasonic signal after ultrasonic illumination and consecutively establishing a representation in two or three dimensions of the elasticity, comprising:

at least one echographic or ultrasonic bar comprising a plurality of transducers configured to produce a planar image;

an excitor that generates and delivers a low-frequency, between 5 Hz and 1000 Hz, direct or indirect applied force in the form of shear waves;

a receiver that acquires ultrasonic signals, a controller that commands and processes data;

a scanner that carries out scanning with the bar in one dimension (1 D) or in two dimensions (2D) in two perpendicular directions, in order to focus three different points of elevation, based on a direction perpendicular to the plane of the image, respectively, for measuring a displacement field of the shear waves along the direction perpendicular to the plane of the image; and

a processor calculating a second derivative of the displacement field in the direction perpendicular to the plane of the image, to obtain a representation of the measure of the elasticity in two (2D) or three dimensions (3D).

PAGE 4/12 * RCVD AT 12/5/2008 5:39:31 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-5/29 * DNIS:2738300 * CSID:7037399771 * DURATION (mm-ss):01-46

28. (Previously Presented) The device according to Claim 27, wherein the excitor generates a mechanical vibration that can be transversal, longitudinal or a mixture of both.

29. (Previously Presented) The device according to Claim 27, wherein the excitor generates a remote palpation using pressure of radiation either with the transducer(s) used for acquiring ultrasonic signals or several transducers arranged around the viscoelastic environment.

30. (Previously Presented) The device according to Claim 27, wherein the excitor generates internal movements of the human or animal body.

31. (Previously Presented) The device according to Claim 27, wherein the excitor comprises one or several hyperthermal transducers, either with the transducer(s) used for acquiring ultrasonic signals or one or several transducers arranged around the viscoelastic environment.

32. (Previously Presented) The device according to Claim 27, wherein the ultrasonic bar is a 1.5 D bar or a wye transducer that focuses at a plurality of different points of elevation and scanning is achieved by ultrasonic focalization.

33. (Previously Presented) The device according to Claim 27, wherein a space between the ultrasonic bar and the viscoelastic environment is constituted at least in part of water or any other element capable of assuring free passage of ultrasonic waves.

34. (Previously Presented) The device according to Claim 28, wherein the mechanical vibration is obtained by one or several vibrating plates, piston(s) and/or bar(s).

35. (Previously Presented) The device according to Claim 27, wherein the receiver comprises ultrasonic transmitters and receivers, digital-to-analog (CNA) and analog-to digital (CAN) converters, memories and digital and analog transmission lines.

36. (Previously Presented) The device according to Claim 35, wherein the ultrasonic transmitters and receivers are arranged in proximity to the ultrasonic bar at a distance less than 50 centimeters.

37. (Previously Presented) The device according to Claim 35, wherein the digital-to-analog converters (CNA) and the analog-to-digital converters (CAN) are situated in proximity to the ultrasonic bar at a distance less than 50 centimeters.

38. (Previously Presented) The device according to Claim 37, wherein the unit constituted of the ultrasonic transducers and their on-board electronic components is connected to the controller by a very high-speed digital connection.

39. (Previously Presented) The device according to Claim 27, comprising two ultrasonic bars.

40. (Previously Presented) The device according to Claim 27, comprising three bars suitable for measuring tissular speeds along directions y, x and z.

41. (Previously Presented) The device according to Claim 39, wherein the two bars are immersed in a hermetic container filled with a liquid.

42. (Previously Presented) The device according to Claim 41, wherein the hermetic container is connected to a rotator suitable for rotating the container.

43. (Previously Presented) The device according to Claim 41, wherein the hermetic container comprises a plurality of orifices into which a mechanical vibrator and/or an ultrasonic transducer is/are introduced.

44. (Previously Presented) The device according to Claim 41, wherein the orifices are situated at 90° (degrees) from each other or one from the other.

45. (Currently Amended) A process for measuring elasticity of a human or animal organ, or viscoelastic environments presenting an ultrasonic signal after ultrasonic illumination and consecutively establishing a representation in two or three dimensions of the elasticity, comprising:

generating a low-frequency applied force or signal in the form of shear waves with an echographic or ultrasonic bar configured to produce a planar image;

acquiring ultrasonic signals in three different points of elevation, based on the direction perpendicular to the plane of the image to obtain a representation of the measure of the elasticity in two dimensions (2D) or three dimensions (3D);

generating ultrasonic images;

calculating tissular speeds based on measuring second derivatives of the longitudinal component of the deformation speed along three orthogonal directions in space; and

inverting the data by recovering parameters describing the viscoelastic environment.

46. (Previously Presented) The process according to Claim 45, wherein the low-frequency applied force or signal has a frequency between 5 Hz and 1000 Hz.

47. (Previously Presented) The process according to Claim 45, further comprising calculating tissular deformation speeds.

48. (Canceled)

49. (Previously Presented) The process according to Claim 45, wherein spatial derivatives of three components of the tissular speed along three directions in space are measured during calculation of the tissular speeds.

50. (Previously Presented) The process according to Claim 45, wherein acquiring the ultrasonic signals takes place while emitting an impulse with an ultrasonic transducer(s) that is reflected by particles contained in the viscoelastic environment.

51. (Previously Presented) The process according to Claim 45, wherein acquiring ultrasonic signals is realized at a cadence of 1/T between 100 Hz and 100,000 Hz, where T is a period between two ultrasonic emissions.

52. (Previously Presented) The process according to Claim 50, wherein acquiring ultrasonic signals is realized at a cadence of 1/T between 100 Hz and 100,000 Hz, where T is a period between two ultrasonic emissions.

53. (Previously Presented) The process according to Claim 45, wherein displacement of the bar is realized by mechanical scanning or an ultrasonic scanning in elevation.

54. (Canceled)

55. (Previously Presented) The device of claim 27, wherein the scanner focuses three different points of elevation using a process selected from the group consisting of:

a mechanical displacement of the echographic or ultrasonic bar, according to a direction perpendicular to the plane of the image,

a mechanical displacement of two echographic or ultrasonic bars, each displaced, and

an electronic modification of the laws of focalization of the echographic or ultrasonic bar.

56. (Canceled)

57. (Previously Presented) The process of claim 45, further comprising focusing the three different points of elevation using a process selected from the group consisting of:

mechanically displacing the echographic or ultrasonic bar, according to a direction perpendicular to the plane of the image,

mechanically displacing two echographic or ultrasonic bars, each displaced, and

electronically modifying the laws of focalization of the echographic or ultrasonic bar.